Kingstone High School
Maths Department
2025-2026

Kingstone High School is a non-selective school, and we welcome students of all aptitudes and abilities. Our size allows us to know our students well and we work hard to ensure that every student achieves their maximum academic potential through an individually tailored curriculum.

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1. Maths Curriculum Plan – Overview

Mathematics at Kingstone High School

At Kingstone High School, our maths curriculum is designed to give every student the knowledge, skills and confidence they need to succeed – both in their exams and in life beyond school. We do this by breaking learning down into small, manageable steps, giving students time to practise and revisit key ideas, and showing them how mathematical concepts link together. This approach, known as *teaching for mastery*, helps students to develop a deep and secure understanding of mathematics, whatever their starting point.

Small steps to success

Learning in maths is carefully sequenced so that new ideas build on prior knowledge. Each lesson is structured around a *Key Question* and a *Path of Progress*, so students know what they are learning and how it fits into their longer journey through the curriculum – from lesson to lesson, year to year, and ultimately towards their GCSEs.

Key Stage 3 – Building strong foundations

In Years 7–9, the focus is on fluency and confidence in the fundamentals: number, algebra, geometry, statistics, ratio and proportion. Students are introduced to new methods and ideas gradually, with plenty of practice and stretch to secure understanding. By the end of Year 9, our aim is for all students to be *"Grade 5 Ready"* – well-prepared to tackle the increased demands of GCSE maths.

Key Stage 4 – Applying knowledge with confidence

From Year 10 onwards, students move from learning new methods to applying their knowledge in different and sometimes unfamiliar contexts. This helps them to think critically, solve problems and see how maths connects to the wider world. By the time

they sit their GCSEs, students are able to draw on strong foundations and apply their skills with confidence and accuracy.

Making connections

Our curriculum encourages students to see maths as a connected subject, rather than a series of isolated topics. By exploring the underlying structures of problems and using consistent representations, students develop the ability to make links across topics and select the most effective methods. This builds long-term understanding and flexibility in problem solving.

Teaching for mastery

We use models, visuals and practical resources to help students grasp abstract ideas and develop deep understanding. In Key Stage 3, students often use manipulatives or draw diagrams to make sense of problems. In Key Stage 4, these supports evolve into pictorial prompts and varied practice, ensuring students not only remember methods but understand *why* they work.

2. Curriculum Map						
	Half term 1	**Half Term 2**	**Half Term 3**	**Half Term 4**	**Half Term 5**	**Half Term 6**
Year 7	**<u>Number Sense Calculations</u>** **Substantive Knowledge:-** Know what BIDMAS stands for. Know place value column names. **Disciplinary Knowledge:-** Using number lines Place Value Ordering numbers Rounding integers and decimals Four operations integers Four operations decimals Four operations negatives BIDMAS **<u>Equations</u>** **Substantive Knowledge:-** Know the inverse of addition, subtraction,	**<u>Time and Measures</u>** **Substantive Knowledge:-** Know how many seconds are in a minute. Know how many minutes are in an hour. Read a clock. Know how many mm in a cm. Know how many cm in a m. Know how many meters in a km. Know how many g in a kg. **Disciplinary Knowledge:-** Converting units of time Using clocks Calculating with time Using timetables and calendars	**<u>Area and Perimeter</u>** **Substantive Knowledge:-** Know the definition of perimeter and area. Know the formula of a triangle and a rectangle. **Disciplinary Knowledge:-** Perimeter using grids Perimeter of simple shapes Perimeter of compound shapes Area using grids Area of rectangles and triangles Area of compound shapes **<u>Coordinates</u>** **Substantive Knowledge:-**	**<u>Fractions</u>** **Substantive Knowledge:-** Know LCM and HCF. Understand place value. **Disciplinary Knowledge:-** Shading fractions of a shape Finding equivalent fractions Simplifying fractions Ordering fractions Converting between improper fractions and mixed numbers Adding and subtracting fractions Adding and subtracting mixed numbers	**<u>Brackets</u>** **Substantive Knowledge:-** Know your times tables. Simplifying expressions. Know HCF. **Disciplinary Knowledge:-** Expanding single brackets Expand and simplify single brackets Factorise into single brackets **<u>Angles</u>** **Substantive Knowledge:-** Know the definition of acute, obtuse, reflex and right angle. One step equations.	**Unitary method** **Recipe proportion** **<u>FDP</u>** **Substantive Knowledge:-** Simplifying fractions. Convert improper fractions to mixed numbers. **Disciplinary Knowledge:-** Multiplying and dividing fractions Reciprocals Fractions of amounts Converting FDP Ordering FDP Writing numbers as percentages of other numbers

	multiplication and division. **Disciplinary Knowledge:-** Algebraic notation and vocabulary Simplifying expressions Substituting into expressions Substituting into formulae Solving one-step equations Solving two-step equations	Estimating and measuring length, mass, capacity Converting units of length, mass, capacity Using appropriate units **<u>2D Shapes</u>** **Substantive Knowledge:-** Know the definition of parallel, perpendicular, equilateral rotational symmetry and line symmetry. **Disciplinary Knowledge:-** Line properties - parallel, perpendicular Shape properties - triangles and quadrilaterals Line symmetry Rotational symmetry	Label a graph and axis. Know what is a coordinate. **Disciplinary Knowledge:-** Reading and plotting coordinates Solve shape problems with coordinates **<u>Factors, Multiples and Prime Number</u>** **Substantive Knowledge:-** Know definition of factors, multiples and prime factors. **Disciplinary Knowledge:-** Finding factors Finding multiples Highest common factor		**Disciplinary Knowledge:-** Types of angles Estimating angles Measuring and drawing angles Angles on a line and about a point Vertically opposite angles Angles in a triangle **<u>Averages</u>** **Substantive Knowledge:-** Place value Add, subtract, multiply and divide. **Disciplinary Knowledge:-** Mean, median, mode, range Interpreting frequency and two-way tables Tally charts Pictograms Bar charts	**<u>Probability</u>** **Substantive Knowledge:-** Know what probability adds to**.** Convert FDP. **Disciplinary Knowledge:-** Using probability phrases Writing probabilities as fractions, decimals, percentages Probabilities of mutually exclusive events Sample space diagrams

			Lowest common multiple Finding prime numbers Prime factor decomposition		Collecting and recording data using tables Averages from frequency tables Using suitable averages	
Year 8	**<u>Percentages</u>** **Substantive Knowledge** Know that percent means 'out of 100' **Disciplinary Knowledge** Percentages of amounts with and without a calculator. Percentage change with and without a calculator. Value for money. **<u>Indices</u>** **Substantive knowledge** Multiplication law. Division law. **Disciplinary knowledge** Simplifying algebraic fractions. **<u>Equations</u>** **Substantive knowledge** Inverse operations **Disciplinary knowledge** Solving equations	**<u>Sequences</u>** **Substantive knowledge** Know that a sequence is a set of numbers that follow a specific rule **Disciplinary knowledge** Term to term rules for numeric and pattern sequences. Find the nth term Substitute into the nth term. **<u>Ratio</u>** **Substantive knowledge** **Disciplinary knowledge** Simplifying ratio Writing ratio in the form 1:n.	**<u>Coordinates</u>** **Substantive knowledge** What is a coordinate Label axis **Disciplinary knowledge** Reading and plotting coordinates. Finding midpoints. Mixed problems: coordinates and midpoints. **<u>Area</u>** **Substantive knowledge** Know names of 2D shapes. **Disciplinary knowledge** Recap area of basic 2D shapes.	**<u>Venn diagrams</u>** **Substantive knowledge** What is a Venn diagram **Disciplinary knowledge** Find probability from Venn diagrams. **<u>3D shapes</u>** **Substantive knowledge** Names of 3D shapes Properties of 3D shapes. **Disciplinary knowledge** Nets of 3D shapes. Find surface area from a net. Find the surface area of cubes and cuboids.	**<u>Straight Line Graphs</u>** **Substantive Knowledge** Know equations for vertical (x=a) and horizontal lines (y=b) Know that coordinates of graphs are connected by an equation/rule **Disciplinary Knowledge** Plotting horizontal, vertical and diagonal lines. Plotting straight line graphs. Finding the equation of a line. **<u>Angles in Shapes</u>**	**<u>Equations and Solutions</u>** **Substantive Knowledge** Know what a 'solution' means. Know what the inequality symbols mean Know that an inequality can have many solutions **Disciplinary Knowledge** Reading and drawing linear inequalities on a number line. Solving single inequalities. Recap expanding brackets. Expand binomials. **<u>Fractions</u>**

	Solving complex equations including brackets Solving equations with unknowns on both sides. Forming and solving equations.	Converting between ratio, fractions and percentages. Sharing in a ratio. Drawing and interpreting scale drawings. **<u>Rounding</u>** **Substantive knowledge** Rounding rules **Disciplinary knowledge** Rounding integers to significant figures. Rounding decimals to significant figures. Estimation.	Area of parallelogram. Area of trapezium. Converting units of area. **<u>Circles</u>** **Substantive knowledge** Identify parts of a circle. **Disciplinary knowledge** Calculate circumference. Calculate area of circles. **<u>Standard form</u>** **Substantive knowledge** Know that numbers can be represented as powers of 10 **Disciplinary knowledge** Using standard form with positive indices. Using standard form with negative indices.	Find the surface area of prisms.	**Substantive Knowledge** Know that translation and reflection maintain the size of the object. Know the difference between translation and reflection. **Disciplinary Knowledge** Translation. Reflection. Angles in quadrilaterals. Combining angle facts. Angles on parallel lines. Angles in polygons. **<u>Statistics</u>** **Substantive Knowledge** Know that a pie chart represents proportion of a total.	**Substantive Knowledge** Know that fractions can also represent decimals. Know that recurring means ‘never-ending’. Know how to use recurring decimal notation. **Disciplinary KNowledge** Recap four operations with fractions. Calculating with fractions. Calculating with mixed numbers. Using recurring decimal notation. Converting fractions to recurring decimals.

					Know that data can be displayed in lots of different ways, and some ways are more useful for different types of data. Know how to read a stem and leaf diagram **Disciplinary Knowledge** Drawing pie charts. Interpreting pie charts. Drawing and interpreting line graphs. Drawing and interpreting stem and leaf diagrams. Finding averages from diagrams.	
Year 9	**Forming and Solving Equations** **Substantive knowledge** • Understand inverse operations • Be able to manipulate algebraic expressions	**Three Dimensional Shapes** **Substantive knowledge** Recognise 2D and 3D shapes	**Percentages** **Substantive knowledge** FDP equivalence Calculate percentage	**Pythagoras' Theorem** **Substantive knowledge** Squares and square roots	**Probability** **Substantive knowledge** Single event probability (R)	**Rates** **Substantive knowledge** SDT problems with a calculator (fractions)

	Disciplinary knowledge • Solve one and two step equations and inequalities • Solve equations and inequalities with brackets • Use negative numbers in inequalities • Solve equations and inequalities with unknowns on both sides • Form and solve equations • Substitute into formulae and equations • Rearrange formulae • Rearrange complex formulae (H) **Testing Conjectures** **Substantive knowledge** • Know what factors, multiples and primes are • Know how to expand a bracket	Use geometric language Draw accurate nets of cuboids and other 3D shapes Plans and elevations Recap area of 2d shapes Surface area of cubes/cuboids/ triangular prisms Surface area of cylinders Volume of cubes and cuboids Volume of prisms Volume of spheres, pyramids, cones (H) **Constructions and Congruency** **Substantive knowledge** Draw and measure angles Construct and interpret scale drawings Locus from a point or points Construct perpendicular	increase and decrease Express a change as a percentage Solve 'reverse' percentage problems Recognise and solve percentage problems Solve problems with repeated percentage change **Numbers** **Substantive knowledge** Integer, real and rational numbers Understand and use surds Work with directed number HCF and LCM Adding and subtracting fractions Multiplying and dividing fractions Numbers in standard form	Identify the hypotenuse of a right-angled triangle Determine whether a triangle is right-angled Calculate the hypotenuse of a right-angled triangle Use Pythagoras Theorem on coordinate axes Explore proofs of Pythagoras' Theorem Use Pythagoras Theorem in 3D-shapes **Deduction** **Substantive knowledge** Angles in parallel lines Solving angles problems (using chain of reasoning) Angles problems with algebra	Relative frequency - including convergence Expected Outcomes Independent Events Use Tree Diagrams (H) **Statistics Review** **Substantive knowledge** Mode, Median, Range Choosing Appropriate average given the data Mean from tables Missing mean problems Interpreting Charts and Graphs **Ratio and Proportion** **Substantive knowledge**	SDT problems with a calculator Use distance-time graphs DMV problems Rates of flow problems Rates of change and units Convert compound units **Enlargement and Similarity** **Substantive knowledge** Recognise enlargement and similarity Enlarge a shape by a positive SF from a point Enlarge a shape by a positive fractional SF Enlarge by a negative scale factor (H) Work out missing sides and angles in a pair of similar shapes

	• Be able to manipulate algebraic expressions **Disciplinary knowledge** • Make true/false conjectures about number • Expand a pair of binomials • Make conjectures about algebra • Explore the 100 grid (forming patterns) • Expand three binomials (H) **Straight Line Graphs** **Substantive knowledge** • Be able to substitute into an expression • Use a table of values • Know that the equation of a straight line is y=mx+c **Disciplinary knowledge** • Find equation of a line from a graph • Interpret gradient and intercept in real-life graphs	bisector and from a point Locus from two lines Construct angle bisector Construct triangles Identify congruent shapes Identify and explore congruent triangles	**Maths and Money** **Substantive knowledge** Solve problems with bills and bank statements Calculate simple interest Calculate compound interest Solve problems with VAT Solve problems with exchange rates Solve unit pricing problems	Conjectures with angles Conjectures with shapes Link constructions and geometrical reasoning **Rotation and Translation** **Substantive knowledge** Identify the order of rotational symmetry of a shape Rotate a shape about a point on a shape Rotate a shape about a point not on a shape Translate points and shapes by a given vector Find the result of a series of transformations (H)	Solve problems with direct proportion (R) Direct proportion and conversion graphs Solve problems with inverse proportion Graphs of inverse relationships (H) Solve ratio problems given whole or part or difference Solve best buy problems Solve problems involving ratio and algebra (H)	Solve problems with similar triangles Explore ratios in right-angled triangles Sine and Cosine as ratios **Algebraic Representation** **Substantive knowledge** Drawing non-linear graphs Interpreting quadratic graphs Investigate graphs of simultaneous equations Represent simple inequalities on a graph

	• Model real-life graphs involving inverse proportion • Explore perpendicular lines (H)					
Year 10 GCSE	**<u>Equations and Inequalities</u>** **Substantive Knowledge:** Know that inequalities can be shown on a number line. Know that a full circle includes the number used, and an empty circle does not include it. Know that equations in the form y=mx+c form straight lines. Know that 'm' stands for the gradient and 'c' stands for the y-intercept. Know what a full line and a dotted line stand for in graphical inequalities. **Disciplinary Knowledge** • Form and solve one and two step	**<u>Simultaneous Equations</u>** **Substantive Knowledge:** Know that equations with more than one variable can have more than one solution. Know that simultaneous equations are two equations that have one solution. **Disciplinary Knowledge** • Solve a pair of linear simultaneous equations • Solve a pair of linear	**<u>Angles and Bearings</u>** **Substantive Knowledge:** Know the cardinal directions as bearings. Know clockwise/anti-clockwise and that bearings are always written with 3 digits. **Disciplinary Knowledge:** • Use cardinal directions and related angles • Draw and interpret scale diagrams	**<u>Probability:</u>** **Substantive Knowledge:** • Know that experiments can show us probability. • Know that the more experiments you do, the more accurate the probability given is. • Know that a tree diagram represents different outcomes from multiple probabilities. **Disciplinary Knowledge:**	**<u>Percentages and interest</u>** **Substantive Knowledge:** Know the difference between compound interest and simple interest. **Disciplinary Knowledge:** • Convert and compare FDP (R) • Work out percentages with and without a calculator (R) • Increase and decrease by a given percentage (R) • Express one number as a	**<u>Types of Number and Sequence</u>** **Substantive Knowledge:** Know the difference between an arithmetic and a geometric sequence. Know how to construct a Fibonacci sequence. **Disciplinary Knowledge:** • Express number as a product of its prime factors (R) • Find HCF and LCM of a set of numbers (R) • Describe and continue arithmetic and

	equations and inequalities • Show solutions to inequalities on a number line • Draw straight line graphs • Find solutions to equations using straight line graphs • Represent solutions to inequalities using set notation (H) • Represent solutions to inequalities on a graph (H) • Solve quadratic equations by factorisation (H) • Solve quadratic inequalities in one variable (H) **<u>Trigonometry</u>** **Substantive Knowledge:** Know that sine, cosine and tangent relate to right-angled triangles. Know how to label the sides of a right-angled	simultaneous equations using graphs • Use a given equation to derive related facts • Form and solve linear simultaneous equations from given information • Solve a pair of simultaneous equations (linear, quadratic) using graphs • Solve pair of simultaneous equations (linear, quadratic) algebraically • Solve pair of simultaneous equations involving a third unknown **<u>Enlargement and Similarity</u>** **Substantive Knowledge:** Enlargement multiplies all	• Understand and represent bearings • Measure and read bearings • Make scale drawings using bearings • Calculate bearings using angle rules • Solve bearings problems using Pythagoras and trigonometry **<u>Working with Circles</u>** **Substantive Knowledge** • Recognise and label parts of a circle • Know the circle theorems (H) **Disciplinary Knowledge:** • Calculate fractional parts of a circle	• Use experimental data to estimate probabilities • Find probabilities from tables, Venn diagrams and frequency trees • Construct and interpret sample spaces for more than one event (R) • Use tree diagrams • Construct and interpret conditional probabilities (tree diagrams) (H) • Construct and interpret conditional probabilities (Venn and two-way) (H) **<u>Ratio and Fractions:</u>**	percentage of another (R) • Calculate simple and compound interest • Repeated percentage change • Reverse percentage (R) • Understand iterative processes, ratios and fractions **<u>Collecting and representing data</u>** **Substantive Knowledge:** Primary and secondary data **Disciplinary Knowledge:** • Understand populations and samples • Construct a stratified sample (H) • Construct and interpret	geometric sequences • Explore other sequences • Describe and continue sequences involving surds (H) • Find nth term of a linear sequence (R) • Find rule for nth term of a quadratic sequence (H) **Indices and roots** **Substantive Knowledge:** Know that a negative power signifies a reciprocal. **Disciplinary Knowledge:** • Square and cube numbers (R)

	triangle – hypotenuse, opposite and adjacent. Know the values for key angles in sine, cosine and tangent ratios (30', 45', 60') Know the cosine and sine formulae for non-right-angled triangles (H) **Disciplinary Knowledge:** • Explore ratio in similar right-angled triangles • Work fluently with hypotenuse, opposite and adjacent sides • Use sine, cosine and tangent ratio to find missing lengths • Use sine, cosine and tangent ratio to find missing angles • Work with Key Angles in right-angled triangles • Use trigonometry in 3D shapes (H) • Understand and use the Sine rule for area of a triangle	lengths of a shape by the same factor. Know that similar shapes have all same angles and proportions between sides. Understand difference between congruency and similarity Know the criteria for proving congruency (H) **Disciplinary Knowledge:** • Enlarge a Shape by a Positive Scale Factor • Enlarge a shape by a fractional scale factor • Enlarge a shape by a negative scale factor (H) • Identify Similar Shapes • Work out missing sides and angles in similar shapes	• Calculate the length of an arc • Calculate the area of a sector • Circle theorems: angle at centre and circumference (H) • Circle Theorems: Angles in a semi-circle (H) • Circle Theorem: Angles in the same segment (H) • Circle Theorem: Angles in a Cyclic Quadrilateral (H) • Understand and use volume of cylinder and cone • Understand use volume and surface area of sphere • Understand and use surface area of cylinder and cone • Solve area and volume problems	**Substantive Knowledge:** • Know that ratios can also express fractions of the whole, and comparing part to part. • Know that ratios show unequal sharing. • Know that gradient represents the ratio of the rise and run of a line. **Disciplinary Knowledge:** • Compare quantities using a ratio (R) • Link ratios and fractions (R) • Share in a given ratio - given total or one part (R) • Link ratios and graphs	frequency tables and polygons, bar charts, two way tables • Construct and interpret pie charts • Criticise charts and graphs • Find and interpret averages from a list and table (R) • Construct histograms (H) • Construct and interpret stem and lead diagrams • Construct and interpret cumulative frequency diagrams (H) • Construct and interpret box plots and compare distributions • Construct scatter graphs, understand line	• Calculate higher powers and roots • Powers of ten and standard form (R) • The addition and subtraction rule for indices (R) • Understand and use the power zero and negative indices • Work with powers of powers • Understand and use fractional indicies (H) • Calculate with numbers in standard form (R) **Manipulating expressions** **Disciplinary Knowledge:** Simplify algebraic expressions (R) Use identities

	• Understand and use sine rule for lengths and angles (H) • Understand and use cosine rule to find lengths and angles (H)	• Use angles on parallel lines to find missing angles • Explore similar triangles • Explore area and volume in similar shapes (H) • Understand and use conditions for congruent triangles • Prove a pair of triangles are congruent (H)	involving similar shapes (H) **<u>Vectors</u>** **Substantive Knowledge:** Know that a vector represent a movement. Know what a column vector means. **Disciplinary Knowledge:** • Understand and represent vectors • Use and read vector notation • Draw and understand vectors multiplied by a scalar • Draw and understand addition and subtraction of vectors	• Solve problems with currency conversion • Link ratios and scales (R) • Use and interpret ratios of the form 1:n and n:1 • Solve best-buy problems • Combine a set of ratios • Link ratio and algebra • Ratio in area and volume problems (H)	of best fit and extrapolation. **<u>Non-calculator methods</u>** **Substantive Knowledge:** Know what a rational and irrational number is. Know what a surd is. **Disciplinary Knowledge:** • Mental and written methods for four operations including fractions (R) • Exact answers • Rational and irrational numbers (H) • Understand and use surds (H) • Calculate with surds (H) • Rounding to dp's, sf's (R)	Add and subract simple algebraic fractions (H) Add and subtract complex algebraic fractions (H) Multiply and divide simple algebraic fractions (H) Multiply and divide complex algebraic fractions (H) Form and solve equations and inequalities with fractions Solve equations with algebraic fractions (H) Represent numbers algebraically Algebraic arguments and proof.

			• Explore vector journeys in shapes (H) • Understand parallel vectors (H) • Explore co-linear points using vectors (H) • Use vectors to construct geometric arguments and proofs (H)		• Estimating calculations (R) • Understand limits of accuracy • Upper and lower bounds (H) • Use number sense • Solve financial maths problems • Break down and solve multi-step problems	
Year 11 GCSE	**<u>Straight Lines and Gradients</u>** **Substantive Knowledge** I know what a table of values is. I know what m and c stand for in y = mx + c **Disciplinary Knowledge** Find equation of line from one point and gradient Equation of line from two points Determine if a point is on a line Perpendicular Lines (H)	**<u>Expanding and Factorising</u>** **Substantive Knowledge** I know what a quadratic expression looks like **Disciplinary Knowledge** Factorise quadratic expressions Factorise complex quadratic expressions (H)	**<u>Multiplicative Reasoning</u>** **Substantive Knowledge** I know what it means to be 'directly proportional'. I know the formulae for pressure, force and area, for speed, distance, time, and for density, mass and volume.	**<u>Transforming and Constructing</u>** **Substantive Knowledge** I know what the four different transformations are. I know what the graph of sin (x) and cos (x) and tan (x) look like. **Disciplinary Knowledge**	**REVISION**	**REVISION**

	Non-linear Graphs **Substantive Knowledge** Identify quadratic, cubic, reciprocal and trigonometric graphs from their shape I know what the 'root' of an equation means. **Disciplinary Knowledge** Plot and read cubic graphs Plot and read reciprocal graphs Identify and interpret roots and intercepts of quadratics Understand and use exponential graphs (H) Find and use equation of a circle with centre at origin (H) Find equation of tangent to any curve (H) **Using Graphs** **Substantive Knowledge** I know how to read information from a graph	Solve quadratic equations = 0 (including factorising) Completing the Square (H) Quadratic Formula (H) **Changing the Subject** Change subject of a known formula Change subject of a complex formula Change subject where subject appears more than once (H) Solve equations by iteration **Functions** **Substantive Knowledge** I know what function notation means. **Disciplinary Knowledge** Function notation	**Disciplinary Knowledge** Understand direct proportion Construct complex direct proportion equations Calculate with pressure and density Understand inverse proportion Construct inverse proportion equations (H) **Geometric Reasoning** **Substantive Knowledge** I know all key angle facts for straight lines, parallel lines and in polygons. I know all circle theorem facts (H) **Disciplinary Knowledge** Proving geometric facts	Perform and describe multiple transformations on shapes Identify invariant points and lines (H) Solve loci problems Understand and use trigonometrical graphs (H) Sketch translations and reflections of a function (H) **Listing and describing** **Substantive Knowledge** I know what 'factorial' n! Means. **Disciplinary Knowledge** Product rule for counting (H)		

	Disciplinary Knowledge Construct and interpret speed/time graphs Recognise and interpret direct and inverse proportion graphs Find solutions using graphs Estimate area under a curve (H)	Composite functions (H) Inverse Functions (H) Graphs of quadratics Solve quadratic inequalities (H) Understand and use trigonometric functions	Circle theorem - angle between radius and chord (H) Circle theorem - angle between radius and tangent (H) Circle theorem - two tangents from a point (H) Circle theorem - alternate segment theorem (H) **<u>Algebraic Reasoning</u>** **Substantive Knowledge** Use rules for sequences Formal algebraic proof (H) Inequalities in two variables (H)	**<u>Show that...</u>** **Disciplinary Knowledge** Work with written communication in 'show that...' style questions with number, algebra, shape and data Proof for congruency (H) Vector proofs (H)		

3. Homework

Homework – SPARX Maths

Homework is automatically set every Monday using SPARX maths. Average completion time is about 40 minutes, but this will vary depending upon the topic and child's understanding.

SPARX is an online platform that changes the difficulty of the questions according to the ability of the individual student. As more questions are answered, the more the questions become specific to your child's needs and abilities. Meaning two students doing the same homework will have differences based on what they find easy and difficult, ensuring that every student is able to make progress from where they are.

There are videos that support each chunk of learning, so these can be used if your child is stuck.

4. Clubs

The maths department offer extra revision and support sessions outside of normal timetabled lessons.

Revision for KS4/GCSE:

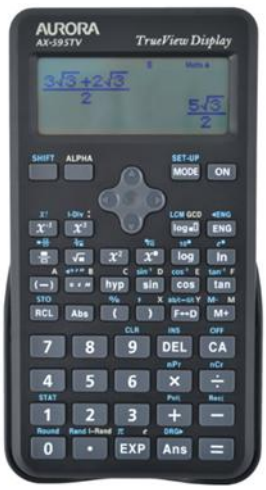
Tuesday Lunchtimes for PAST-PAPER revision.

Wednesday after-school for TOPIC-BASED revision

5. Calculators

We recommend investing in a scientific calculator that has a display which can show fractions and powers as they appear in written work.

There are many calculators which are available but two recommendations are the Casio FX83 GTX, or the AURORA AX595TV. School pricing is not much different to finding these in the shops, and there are often sales or promotions which can make them cheaper.



Prices are roughly £10 - £16. If you have an older calculator from an older sibling that has a scientific display, then these are also adequate.

6. KS3 Information

Our KS3 curriculum is based on giving exposure to the key procedures necessary to build success on at GCSE level. We focus on fluency in methods and understanding how to work a concept from different directions.

7. GCSE Information

Exam Board

Kingstone High School's exam board is **EDUQAS (**also known as **WJEC).** For detailed information please follow this link: GCSE Mathematics | GCSE Maths Past Papers & Resources | Eduqas

The detail of the exam board and entry code is:

WJEC Eduqas GCSE Mathematics (foundation tier): C300PF

WJEC Eduqas GCSE Mathematics (higher tier): C300PH

At Foundation tier, students can get a maximum grade of a 5 (a good pass). Whereas at Higher tier, students can achieve a grade 9. A grade 9 is awarded based on the top 3% of scores in the country.

There is no difference in the content needed between the exam boards, but for EDUQAS there is a difference in the number of papers taken; only two papers are sat. The first is non-calculator, the second is calculator.

Both papers are 2hours and 15minutes in length (135 minutes), totalling the necessary examination time.

Entry Level Maths

For some students who will find success at GCSE a difficulty, we provide the opportunity for them to complete the Entry Level Certificate in Maths, Levels 1, 2 and 3. These are completed alongside the teaching for the GCSE, as the course complements well the fundamental aspects of the GCSE content.

Exams for these are sat during lesson time, marked internally, and then moderated by the exam board.

Marking and Feedback

Marking in maths focuses on the students' Key Assessment, together with any other in-class tests that are necessary as the year progresses. Students will get their paper marked by their class teacher, with verbal feedback to the whole class based on strengths and weaknesses. Each assessment's RAG (red, amber, green) sheet enables students to find their strengths and weaknesses. In lessons, students will often be required to mark work in purple pen, and make corrections,

Feedback in maths is mainly verbal and by examples. This is the most effective way of helping students understand their mistakes and clear up any misconceptions. Feedback is aimed to move the student forward, not just tell them if they are successful or not.

Revision and Support

We offer GCSE practice books and revision guides through ParentPay. There are many other good options available from different sources.

We recommend a number of **websites** for students to trial and gain extra practice.

Videos and Worksheets – Corbettmaths

IXL Skill Plan | Programme of Study: Key Stage 4, Year 11

The GCSE Maths Tutor from YouTube | 100% Student Pass Rate

GCSE Maths Revision - Free GCSE Maths Papers & Exam Questions

Appendix - Our curriculum:

- Builds on students' prior learning creating a strong foundation for the exam years and further study
- Supports our four teaching principles of chunking, modelling, scaffolding and checking for understanding so that all students can access the material and make positive progress
- Focuses on embedding the core knowledge and vocabulary to help students feel secure when tackling more complex concepts, tasks or theories
- Is chunked to support knowledge retention and is sequenced effectively to provide opportunities for key aspects of the learning to be reviewed, revised and revisited
- Is given a context, with the Big Picture, so there is an understanding of how the learning fits and links to the subject and the wider world
- Has clear endpoints that monitor the success and progress of the individual
- Reinforces the importance of reading and promotes high standards of literacy and numeracy

AT KS3

At KS3, the school provides all students the opportunity to study a core EBacc offer of maths, English, science, languages, Geography and History alongside PE, Music, Music Technology, Design and Technology, Art, Drama, RE and SPHERE (run through our tutor programme).

Students complete a three-year KS3 with some subjects incorporating transition to GCSE within that time. All students are provided with a broad and balanced curriculum before they specialise, in the Spring of Year 9, depending on personal preferences and future career ambitions. Each year, option blocks are customised to meet the needs of the year group and offer a bespoke programme for them. A comprehensive careers programme is in place to support the option process.

Students are taught in mixed ability form classes in Year 7 based on information gathered during the transition process. These are refined in Year 8 and 9 and broadly set around language ability which further supports our language uptake for EBacc.

There is targeted provision and intervention for those students in Year 7 and 8 to develop and support any social, behavioural, emotional and well-being needs which have been, or could be, barriers to their learning and attainment.

The core subjects of English, Maths and Science have a dedicated HLTA working within the faculty to provide high quality, immediate intervention and support in these key subjects.

AT KS4

At KS4, the school provides students with the opportunity to studying the core subjects of maths, English and science (including Triple Science) along with the foundation subjects of computing, PE and PSHE (which is delivered through our SPHERE tutor programme as in KS3). Choosing EBacc subjects of English, maths, the sciences, history or geography and a language is heavily encouraged to provide students with a broad and balanced curriculum as possible.

We offer students a wide range of other GCSE opportunities: Art and Design, Music, Media Studies, Ethics, Business Studies, Design and Technology, Food and Nutrition, Computing and PE. Alongside this, we provide students with opportunities to study alternative, vocational Level 2 qualifications in Travel and Tourism, Childcare and Sport.

Functional Skills from Entry Level to Level 2, in English and Maths, are also timetabled for those students who would benefit from achieving success in these core areas.

The core subjects of English, Maths and Science each have a dedicated HLTA working within the faculty to provide high quality, immediate intervention and support in these key subjects.